

ENG Wireless Transmitter  
**WX-RP410**

# Operating Instructions



**Panasonic®**

Before attempting to connect or operate this product,  
please read these instructions completely.

**CAUTION**

RISK OF ELECTRIC SHOCK  
DO NOT OPEN



**CAUTION:**  
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO  
NOT REMOVE COVER (OR BACK). NO USER SER-  
VICEABLE PARTS INSIDE.  
REFER SERVICING TO QUALIFIED SERVICE  
PERSONNEL.



SA 1965

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



SA 1966

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

The serial number of this product may be found on the bottom of the unit.

You should note the serial number of this unit in the space provided and retain this book as a permanent record of your purchase to aid identification in the event of theft.

Model No. \_\_\_\_\_

Serial No. \_\_\_\_\_

**WARNING:**

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

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## READ THE FOLLOWING INSTRUCTIONS BEFORE USE

Use of the Panasonic Wireless devices is regulated by the Federal Communications Commission as described in Part 74 subpart H of the FCC regulations, and users authorized there by are required to obtain an appropriate license.

### CAUTION :

It is a violation of Federal Law to begin operating this system prior to obtaining an FCC Radio License.

The FCC ID number for this radio equipment is listed below.

FCC ID : ACK9TAWX-RP410

## PREFACE

The ENG Wireless Transmitter WX-RP410 is designed to be used with the ENG Wireless Receiver WX-RP700.

Reliable, time proven, LSI technology makes it possible to achieve the compact size and low weight that enhances mobility.

A PLL synthesizer system provides stable transmission throughout the production area, and, an on board compander system helps to maintain the systems outstanding 100 dB dynamic range.

## FEATURES

- The freedom of movement and performance of wired microphone is now achieved by the simple operation of the new PLL wireless transmitter.
- The PLL synthesized Oscillator makes it simple to change the operating frequency to insure interference - free operation anywhere.
- The compander technique yields a dynamic range in excess of 100 dB.
- The space diversity reception is least susceptible to multipath reflection dropouts.
- The Battery charge condition is indicated by the Battery Status Indicator.
- Superb audio quality.
- Possible to cover the 49 usable channels solely by this model.
- It goes anywhere with the "Miniature Condenser Microphones for Wireless Transmitter" or your choice of wired microphones.
- The built-in Audio Input Level Trim and Audio Peak Level Indicator make input level control of easy.
- A maximum of 6 channels can be used in the same area.

## PRECAUTIONS

- Do not expose the transmitter to water or moisture.
- Do not operate the transmitter if it becomes wet. Do take immediate action if the transmitter does become wet. Turn power off and consult with qualified service personnel. Moisture can damage the transmitter and also create the danger of electric shock.
- Do not use the transmitter beyond its temperature, humidity or power source ratings.
  - (a) Ambient temperature range must not exceed 32°F - 122°F (0°C - +50°C).
  - (b) Avoid using the transmitter when humidity is above 90%.
- For cleaning the body case, wipe with dry cloth. If necessary, use a damp cloth with mild soap. Do not use chemicals such as benzine, alcohol or thinner for cleaning.
- If intermittent audio occurs during operation, turn off the power and consult with qualified service personnel.
- Do not subject the microphone to shock.
- Try to place the antenna in a high position for best reception.
- Do not use this transmitter in places affected by the motor, transformer or automobile ignition noise.
- Do place the transmitter at least 2m apart from the receiver when more than one transmitter is used on different frequencies to minimise interference.
- Before turning the transmitter off, turn down the faders of the mixer any other equipment which is connected to the Receiver Output of the receiver. Otherwise noise will be generated by the power on/off action of the transmitter.
- Use 1 transmitter for 1 receiver.

## **SUGGESTIONS**

### **Microphone position**

- Attach the microphone unit to your necktie or lapel using the clip provided, preferably close to your mouth to obtain better tone quality.
- Speaking loudly into the microphone may cause distortion.

Refer to the Adjustment of the Audio Input Level Trim.

### **Feedback (Howling)**

If this unit is used in a small room with the loud-speaker, and is close to the speaker, feedback may occur.

To eliminate the feedback, turn down the volume control of your loud-speaker or change the position of the microphone.

Factors such as speaker position and room structure affect feedback. Feedback is most likely to occur when the microphone directly faces the speaker. So it is advisable to position speaker accordingly.

### **Handling the transmitter**

During operation, wear this unit on your body.

Do not place any metallic objects in the same pocket as this can weaken signal strength and cause noise.

When not using, be sure to set the power switch to "OFF". If this unit is not to be used for a long time, remove the battery from this unit.

### **Noise-free sound**

This unit will typically transmit over a range of approximately 260 ft (78 meters). Should noise occur, observe the following points.

- The distance between the transmitter and the receiver should be as short as possible.
- The receiver should be as far as possible from cars and any other devices which generate electrical noise, such as fluorescent lights and electric motors.

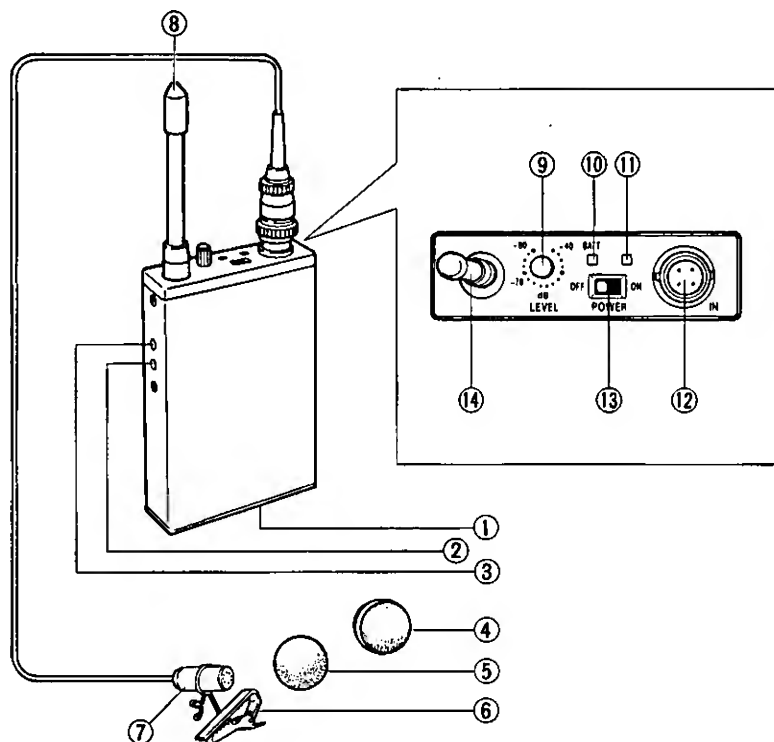
### **Use of two microphones**

When using two wireless microphones, each must be of a different transmission frequency. Do not use 2 microphones of the same frequency simultaneously.

### **Outdoor operation**

A wind screen is provided.

## MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS

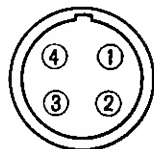


1. **Battery Case**
2. **Group Selection Switch**  
Refer to page 10.
3. **Channel Selection Switch**  
Refer to page 10.
4. **Windscreen (Metal)**
5. **Windscreen (Foamed Urethane)**
6. **Microphone Holder Clip**
7. **Condenser Microphone**
8. **Antenna (Provided)**
9. **Audio Input Level Trim [LEVEL]**
10. **Battery Status Indicator [BATT]**  
This indicator light changes to red from green to indicate need for battery replacement.
11. **Audio Peak Level Indicator [PEAK]**
  - This indicator lights on high audio peaks.
  - Adjust the audio level such that this indicator lights on high audio peaks.

12. **Audio Input Connector [IN]**

The pin configuration is shown below.

1. HOT 1 (Condenser Microphone)
2. HOT 2 (Dynamic Microphone)
3. Phantom Power Supply  
(+3.1V 2mA Max.)
4. Ground



13. **Power On/Off Switch [POWER, ON/OFF]**

14. **Antenna Terminal**

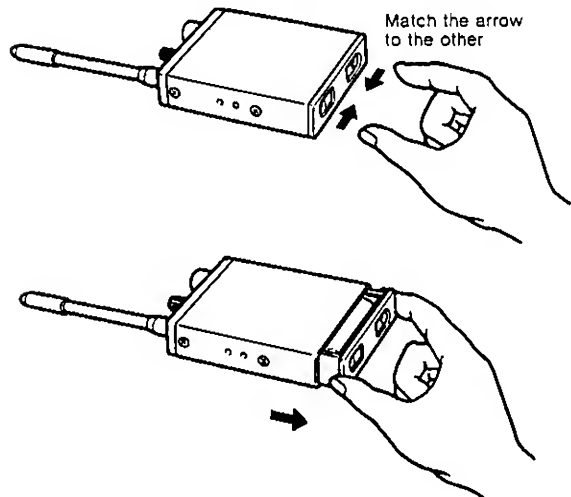


## BATTERY INSTALLATION

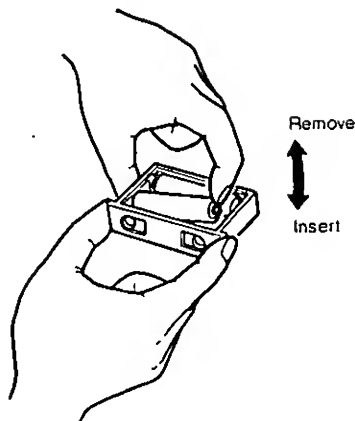
### Precautions :

- Be sure to turn off the power of this unit.
- Use the alkaline battery (AA size).  
The operating time with battery is approx. 6 hours.  
(Panasonic Alkaline Dry Battery of "AA" type is used at 77°F (25°C).)

### 1. Remove the Battery Case as shown in the following.



### 2. Installing the battery

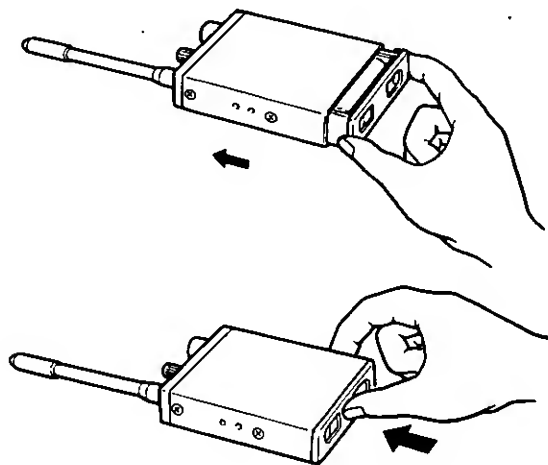


### Notes :

1. Observe the correct battery polarity  $\oplus$  and  $\ominus$ .
2. Do not touch the electrode or contact when the battery is installed.
3. Do not attempt to recharge the battery. The battery is not rechargeable.
4. Do not make a short circuit between  $\oplus$  and  $\ominus$  polarities of the battery.
5. Do not mix used batteries with new batteries. Replace these batteries together.
6. Do not mix this battery with different types of batteries.

### 3. Replacing the battery case

Insert the Battery Case firmly until the click sound can be heard.



### 4. Battery Check

After installing the battery, set the power switch to on and the power indicator LED will light. If the power indicator LED fails to light, it is an indication that the battery is bad.

Replace the battery with new one.

## How to Check the Battery Conditions

The Battery Status Indicator shows the battery condition. This indicator lights green after turning on the power when the total voltage of two batteries is more than approx. 2.0V.

### Notes :

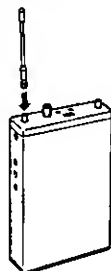
1. When this indicator light changes to red from green, replace the battery within 45 minutes. [at 77°F (25°C)]
2. When the frequency is changed while the power on, these indicator lights go off for a moment. Therefore use this transmitter after confirming the operation of the battery indicator.

## Connection of Antenna

Connect the Antenna (provided) to the Antenna Terminal (14) on this unit.

### Note :

Keep the Antenna connected to the transmitter when not used to project the connectors.

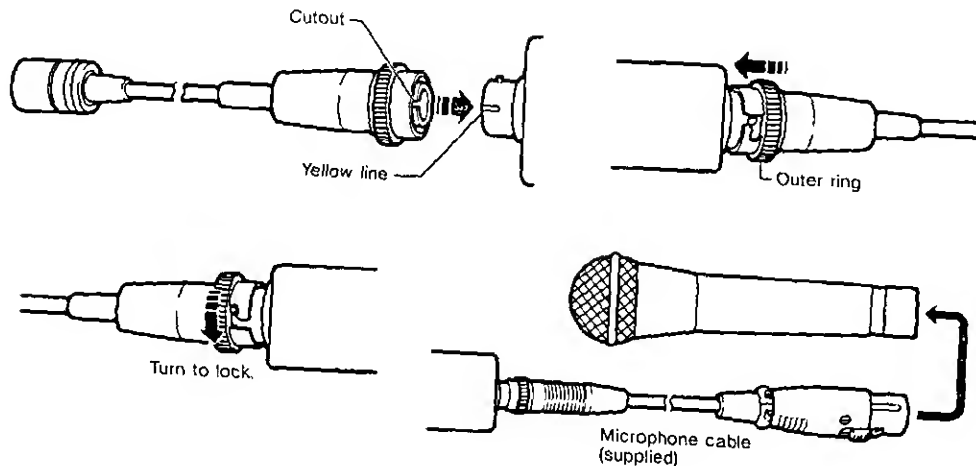


## CONNECTION OF CONDENSER MICROPHONE TO TRANSMITTER

Align the slot in the inner ring of the male microphone connector with the yellow mark on the outer ring of the in connector on the transmitter. Push down the outer ring of the microphone connector and turn clockwise to lock the connector.

Note :

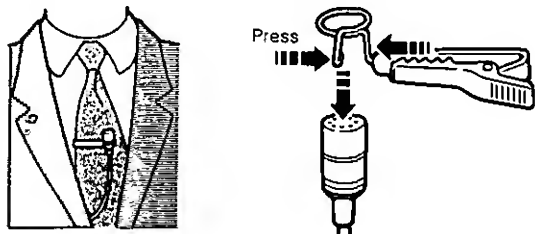
When using a regular microphone (equipped with a cannon connector XLR/3-pin), first connect the supplied microphone cable, then connect the external microphone.



## USE OF THE SUPPLIED ACCESSORIES

### 1. Microphone Holder Clip

To attach the microphone on a dress, necktie, lapel or etc., use the Microphone Holder Clip as shown.



The Microphone Holder Clip can be mounted in a vertical or horizontal.

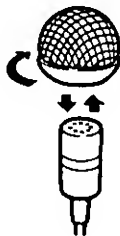
### 2. Wind Screen

To eliminate the effect of wind noise or breathing, cover the microphone with the wind screen.

[Installation of wind screen]

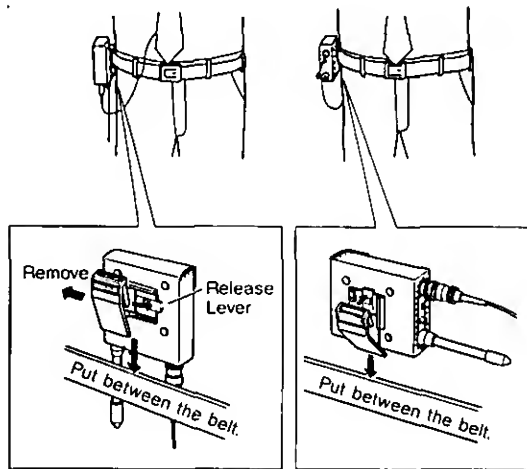
Insert the Wind Screen onto the microphone head while turning the wind screen.

When removing the wind screen, pull out it by turning.



## How to wear this transmitter

Insert this unit into the Belt Case and attach the Belt Case onto the Belt as shown below.



The Belt Case Clip can be mounted in a vertical or horizontal direction.

**Note :**

Use this transmitter after the Battery Status Indicator lights in green.

The sound can not be heard for 2 sec. after turning power on.

## FREQUENCY SETTING

### Group Description

To use the transmitters by utilizing a maximum 6 channels in the same area, a specified group number should be chosen by the Group Selection Switch.

Choose one group number from 1 - 6 in the same area.

- When using Group 1, 2, 4 or 5, 6 channels can be used.
- When using Group 3 or 6, 5 channels can be used.

If the specified channel can not be used in the same group, use the channel of an other group (include • and :) not effected by the interference. (Confirm the frequency)

#### Notes :

1. Be sure to use this receiver and the transmitter at the same frequency.
2. Receivers which are used in the same area should be set to the same group number and each Channel Selection Switch set to a different number.
3. In case that radio interference is encountered, change the frequency immediately.
4. The distance between groups may be changed by various conditions.

### How to set the frequency

1. Set the Group Selection Switch (2) of this transmitter to the same number as the one of the receiver.
2. Set the Channel Selection Switch (3) of this transmitter to the same number as the one of the receiver.

#### Note :

Use the Miniature Screw Driver (provided) to set the above switches.

3. Turn on the power of the receiver only.  
Set the receiver to the desired frequency.  
Confirm that the Receiving Level Indicator on the receiver lights off.

#### Notes :

1. If the Receiving Level Indicator lights with turning on the power of the receiver and turning off the power of transmitter, this unit will be interfered by the external radio wave.
2. Do not use the transmitters having adjoining channels in the different group within 600 ft. (200m) to avoid the interference.

# Frequency List

Carrier frequency (MHz)	GROUP • CHANNEL							
	GROUP1	GROUP2	GROUP3	GROUP4	GROUP5	GROUP6	GROUP •	GROUP :
797.000	1,1							
797.125		2,1						
797.250	1,2							
797.375		2,2						
797.500			3,1					
797.625							• ,1	
797.750	1,3							
797.875		2,3						
798.000			3,2					
798.125							• ,2	
798.250			3,3					
798.375							• ,3	
798.500		2,4						
798.625	1,4							
798.750							• ,4	
798.875							• ,5	
799.000	1,5							
799.125							• ,6	
799.250			3,4					
799.375		2,5						
799.500							• ,7	
799.625	1,6							
799.750		2,6						
799.875			3,5					

## Frequency List

Carrier frequency (MHz)	GROUP • CHANNEL							
	GROUP1	GROUP2	GROUP3	GROUP4	GROUP5	GROUP6	GROUP •	GROUP :
800.000								: ,1
800.125				4,1				
800.250					5,1			
800.375				4,2				
800.500					5,2			
800.625						6,1		
800.750								: ,2
800.875				4,3				
801.000					5,3			
801.125						6,2		
801.250								: ,3
801.375						6,3		
801.500								: ,4
801.625								: ,5
801.750				4,4				
801.875					5,4			
802.000								: ,6
802.125				4,5				
802.250								: , *
802.375						6,4		
802.500					5,5			
802.625								: , :
802.750				4,6				
802.875					5,6			
803.000						6,5		

## The Broadcasting System Description

As the television uses the frequency of 68ch or 69 ch, use the group according to the following.

The area receiving UHF TV 68ch : Use 4 , 5 or 6 Group.

The area receiving UHF TV 69ch : Use 1, 2 or 3 Group.

### Note :

In the area receiving both of UHF TV 68ch and 69ch, choose the group not to be interfered with by the external radio wave.

## TRANSMITTING CHANNEL AND FREQUENCY

### Adjustment of the Audio Input Level Trim

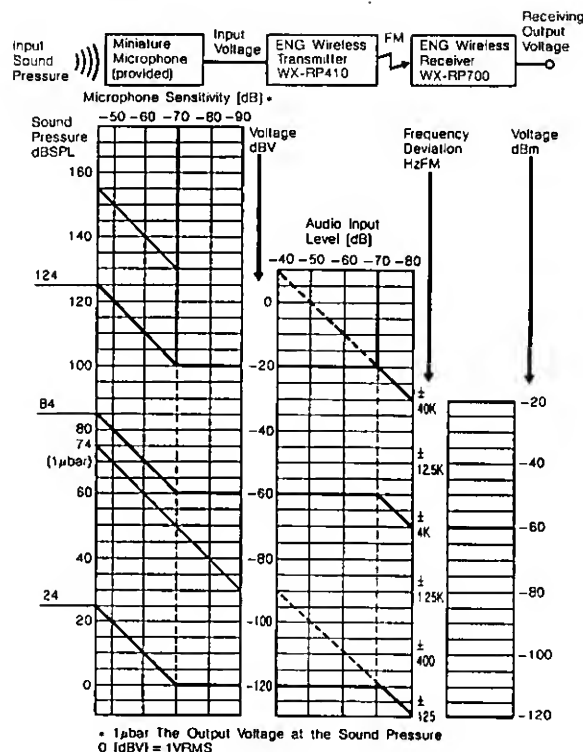
When Audio Peak Level Indicator frequently lights, adjust this trim by turning counterclockwise so that the Audio Peak Level Indicator lights sometimes.

When the white noise is heard without lighting of the Audio Peak Level Indicator, adjust the trim so that the Audio Peak Level Indicator lights sometimes.

A standard Audio Input Level is shown in the following table.

Microphone	Audio Input Level
Miniature Microphone (provided)	-70 dB
Dynamic Microphone	-75 dB
Condenser Microphone	-52 dB

## Level Set Diagram

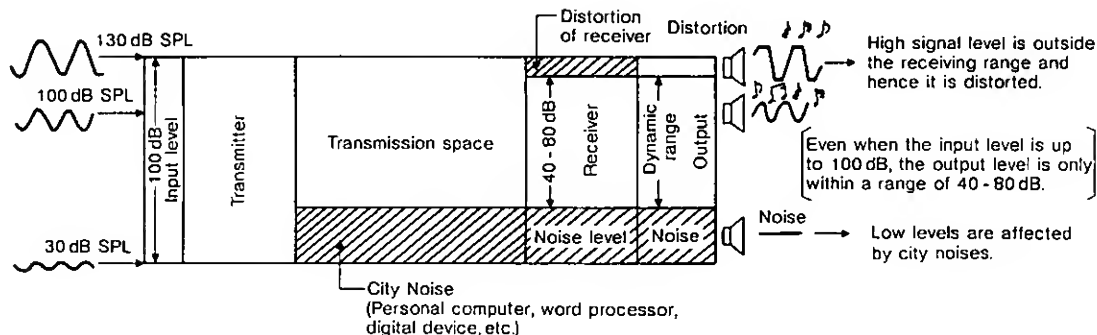




## NOISE REDUCTION SYSTEM

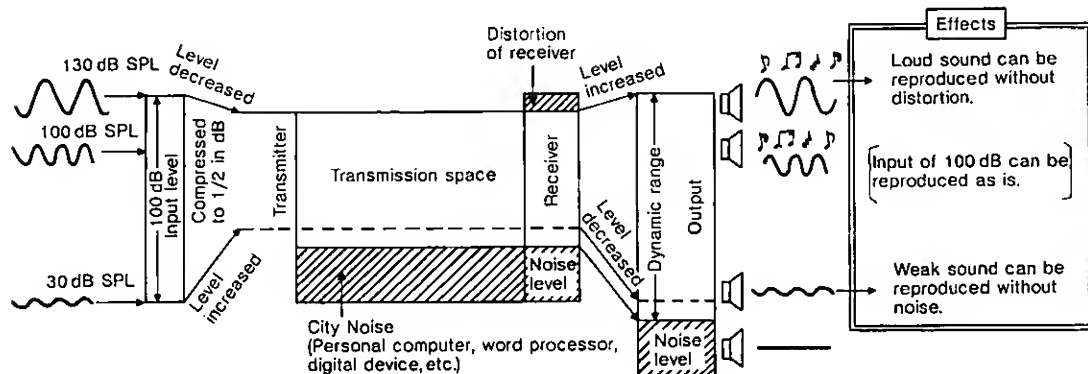
Conventional FM transmission techniques exhibit certain characteristics that have limited the dynamic range and fidelity of traditional wireless microphone systems. When sound pressure level is high there is a danger of over modulating the FM waveform resulting in audible distortion.

When levels are low, the noise imposed on the transmitters signal by interference sources becomes audible. Due to these limitations, the typical dynamic range of these systems is in the range of 40-60 dB with a maximum of 80 dB under ideal conditions.



The Panasonic wireless system uses a compression / expansion technique to reduce the dynamic range of the audio signal before transmission. The signal is then expanded back to its original form at the receiver.

By reducing the range of the audio signal during transmission, the system virtually eliminates the distortion and noise difficulties faced by other systems. WX-RP410 or WX-RP700 can routinely provide a dynamic range of 100 dB even in high noise environments.



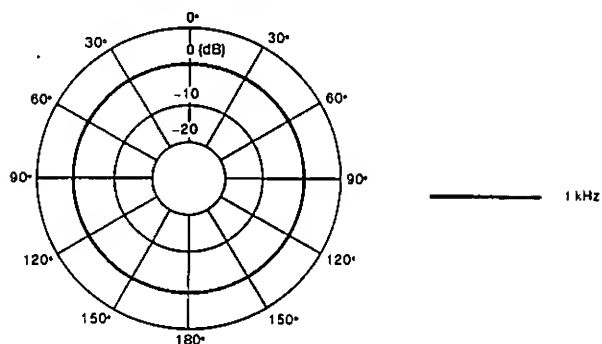
## SPECIFICATIONS

Carrier Frequency :	49 channel between 797.000 MHz - 803.000 MHz
Type of Emission :	140KF3E
Oscillator :	Crystal-controlled PLL Synthesizer
RF Output Power :	30 mW (max.) 20 mW (typ.)
Frequency Stability :	$\pm 0.005\%$
Antenna :	1/4 Wavelength Whip antenna
Reference Deviation :	$\pm 4$ KHz at 1 KHz ( $-60$ dB, LEVEL $-70$ dB)
Frequency Response :	40 Hz - 15 KHz
Signal to Noise Ratio :	More than 60 dB at $\pm 4$ KHz Deviation (A - weighted)
Maximum Input Level :	+10 dB at Gain Trim Minimum (LEVEL $-40$ dB)
Audio Gain Trim :	40 dB Continuous Adjustable
Battery Size :	"AA" size or Equivalent $\times 2$
Battery Life :	Approx. 6 hours (Panasonic Alkaline Dry Battery of "AA" type is used at 77°F (25°C).)
Current Consumption :	140 mA (typ.) Continuously with two "AA" size alkaline batteries
Ambient Operating Temperature :	32°F to 122°F (0°C to 50°C)
Dimensions :	103 (L) $\times$ 64 (W) $\times$ 18 (H) mm
Weight :	Approx. 210g with alkaline batteries
<b>Condensert Microphone</b>	
Type :	Back-electret Condenser
Directivity :	Uni-directional
Sensitivity :	$-66$ dBV $\pm 3$ dB
Maximum SPL :	More than 110 dB SPL
Dimensions :	$\phi 5 \times 12$ (mm)

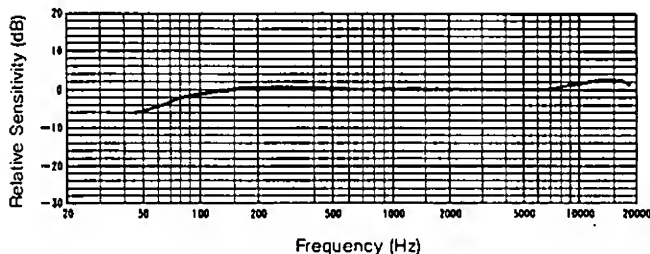
## ACCESSORIES

Miniature Condenser Microphone .....	1 pc.
Audio Input Connector to XLR/3-pin Cable .....	1 pc.
Microphone Holder Clip (Vertical and Horizontal type) .....	each 1 pc.
Windscreen (Metal type and Foamed Urethane type) ..	each 1 pc.
Belt Case .....	1 pc.
Battery Case .....	1 pc.
Miniature Screw Driver .....	1 pc.

## DIRECTIONAL CHARACTERISTICS



## FREQUENCY RESPONSE





# Panasonic

Communications & Systems Company

Division of Matsushita Electric Corporation of America

## PROFESSIONAL/INDUSTRIAL VIDEO

**HEADQUARTERS:**

50 Meadowland Parkway, Secaucus, New Jersey 07094

**EASTERN ZONE:**

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**CENTRAL ZONE:**

425 E. Algonquin Road, Arlington Hts. IL 60005 (708) 981-4826

**SOUTHERN ZONE:**

Dallas Region: 4500 Amon Carter Blvd., Ft. Worth, TX 76155 (817) 685-1117

Atlanta Region: 1854 Shackleford Ct. Suite 115, Norcross, GA 30093 (404) 925-6841

**WESTERN ZONE:**

Seattle Region: 1200 Westlake Ave. N., Suite 508, Seattle, WA 98109 (206) 285-8883

Los Angeles Region: 6550 Katella Ave., Cypress, CA 90630 (714) 373-7275

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